

Mechanisms of Urease Activity of *Helicobacter pylori* on HeLa and Vero Cells Layer Disruption

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Background & Objectives: *Helicobacter pylori* plays an important part in the development of gastric ulcer and duodenum ulcer in particular. It is the cause of one of the most common infections in the world which involves at least half of the population in most communities. This bacterium, which is seen in mucousal layer and in vicinity of epithelial cells causes, mucousa changes, cell disorders, tissue Lesions, and inflammation. In this study, the role of Urease activity of *Helicobacter pylori* on HeLa and Vero cells layer disruption was investigated.

Methods: The study was carried out on 60 biopsy specimens. A speedy urea test was performed in endoscopy theatre, for all these samples. The biopsy samples were transferred to the laboratory in transport medium and were cultured in the selected medium. Then, The identification of bacteria was done by microscopic examination and biochemical tests. The direct effect of supernatant containing urease enzyme extracts from 50 bacterium samples on HeLa and Vero cells was investigated. To investigate the factors causing cell Lesions, ammonia was used in PBS with different concentration.

Results: In the presence of Urease enzyme and a different concentration of Urea, the color of the culture medium turned in to purple. This change was a sign of the production of Layer amounts of ammonia. Intracellular vacuoles were formed as well. In this study, in concentration over 8 m. molar the cytopathic effect was observed in the vacuoles, and in the concentration of 40 m. molar of ammonia the full erosion of HeLa and Vero cells layer occurred.

Conclusion: Therefore, by adding urease enzyme containing supernatant in the absence of urea, intercellular vacuole was not observed. Neither in concentrations of below 8 m. molar of ammonia was intercellular cell vacuole observed. While in concentrations over 8 m. molar the cytopathic effect was observed in the from vacuoles in HeLa and Vero cells.

Keywords: HeLa and Vero Cells; Urease; Cytopathic; *Helicobacter pylori*